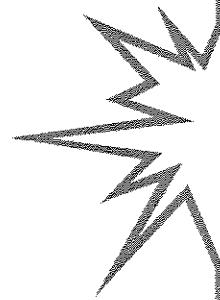


Ratemaking for the Hawaii Renewable Portfolio Standard

Jim Lazar RAP Associate
Hawaii PUC Workshop
November 22, 2004



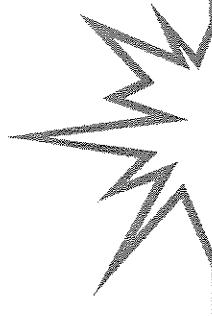
The Regulatory Assistance Project

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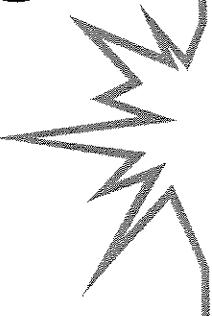
<http://www.raponline.org>



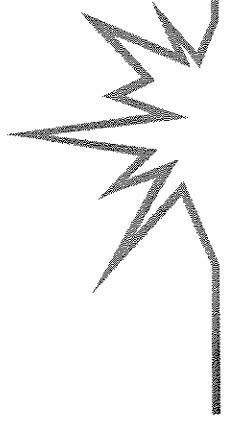
Overview

- Issues relating to regulatory format
 - Cost of service regulation vs. PBR
- Issues relating to resource ownership
 - Utility ownership or IPP ownership
- Issues relating to cost recovery
 - Decoupling
 - Energy Cost Adjustment Clause
 - DSM Costs
- Issues relating to customer rate design

Customer Rate Design IS an Input, not an Output.

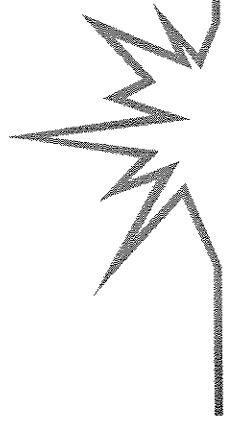


- Decoupling / RPC / Power Cost Adjustment
- Inverted Residential Rates
- Green Power Rates
- Rolling Baseline General Service Rates
- Time of Use Rates for Large Customers
- Vintage Rates
- Hook-up Fees



Inverted Residential Rates

- Convert existing flat rate to an inverted rate.
- Recognizes that higher usage levels are:
 - Discretionary, not essential
 - Contribute to need for new resources
 - Tend to have lower load factors (A/C)
- Will tend to suppress peak demand growth
- Will tend to encourage investment in solar water heaters and energy efficiency measures

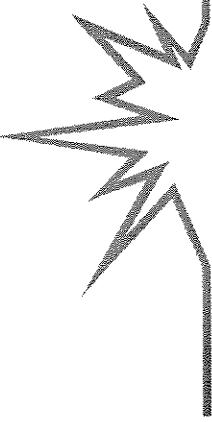


Modeling Inverted Rates

- Assume low elasticity for infra-marginal usage;
- Assume higher (but still modest) elasticity for beyond-marginal usage.
- Assume lower load factor for beyond-marginal usage.
- Calculate reduction in energy and capacity requirements.
- Measure power supply, transmission, and distribution cost deferral.

Expected Results from Inverted Residential Rates

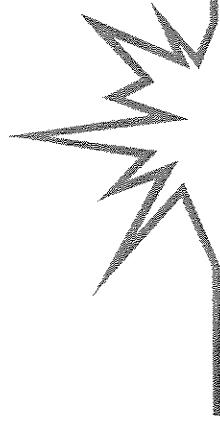
- Assume a rate with a 30% reduction for usage below 300 kWh/month, offset by a 20% increase for usage in excess of that.
- Few customers use less than 300 kWh, and those customers use less than 15% of total residential sales. Very little pressure for increased consumption.
- Expect about a 4% reduction in energy load and >4% reduction in peak demand in the short run.
- Expect about a 12% reduction in energy load and >12% reduction in peak demand in the long run.



Green Rates (or Brown Rates)

- Customer must make an affirmative selection of what portfolio they want to meet their needs.
- Similar to the “ballotting” for long distance carriers in 1990.
- Allow 20% to 100% green.
- Brown rate: customer must accept all future environmental responsibility.

Expected Results from Green Power Pricing

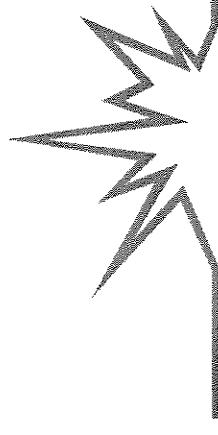


- Even a few percent choosing green can create a demand for all NEW generation to be green.
- Expect 5% - 15% of customers to choose green power if completely voluntary.
- Expect much higher percent if some form of balloting is required (or default portfolio includes 20% green).

Rolling Baseline General Service Rates

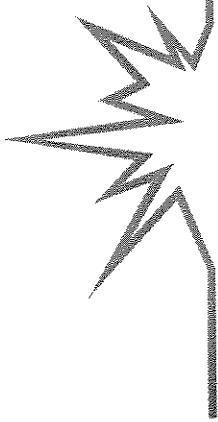
- Allow each customer about 75% of “baseline” usage at one price, based on embedded resource costs, and a higher price for excess usage based on marginal resource costs.
- Set the baseline as a rolling average of 3-years usage.
- New customers must grow into a baseline.
- Probably no effect on load shape.

Expected Results from Rolling Baseline Rates

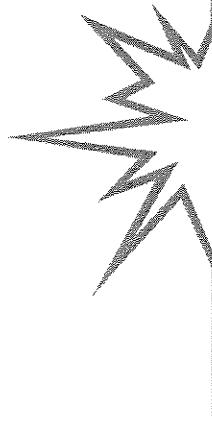


- Assume a 20% reduction in the price for usage below the baseline, offset by a 60% increase for usage over the baseline, to be revenue-neutral at constant consumption, and fully compensatory for new resources.
- Few customers will drop below the baseline, so few will be influenced in consumption by the lower price.
- Expect about a 6% reduction in usage in the short-run, and an 18% reduction in usage in the long-run.
- Customers will tend to prefer efficiency and on-site renewable resources due to higher marginal price.

Time-Of-Use Rates For Large Customers

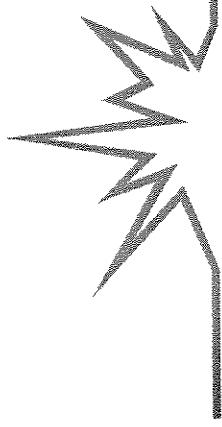


- Traditional TOU rates -- recover the majority of capacity costs in the on-peak energy charge.
- Critical Peak Pricing -- recover the majority of capacity costs in a small number of “critical” hours, noticed to customers one day ahead or in real-time



Expected Result From TOU Rates

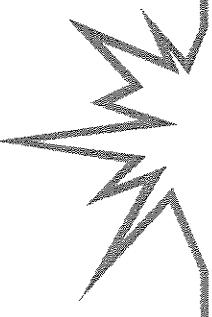
- Traditional TOU: moderate elasticity effect applied to on-peak period. Some efficiency, some substitution, some curtailment.
- Some investment in thermal storage.
- Critical Peak rates: expect significant curtailment during critical hours. California experience very promising.



Vintage Rates

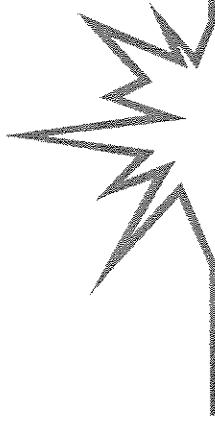
- Allow existing customers to pay rates based on existing resources (including renewals and replacements), and new customers to be allocated costs based on new resources.
- Higher costs to newer customers.
- Will tend to encourage new customers to install more efficiency and on-site renewable resources at time of construction

Expected Result of Vintage Rates



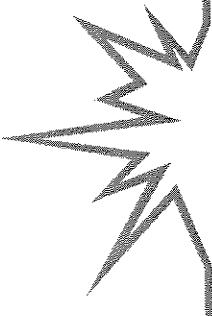
► Assuming new customers pay 30% above current rates:

- Pressure for rate increases from new resources is greatly relieved. Existing customers benefit.
- New buildings will be slightly more efficient
- New customers will be slightly more likely to choose alternative fuels or CHP
- Value of existing real estate will increase



Impact Fees

- Charge new customers one-time hook-up fee equal to difference between marginal and average costs.
- Puts on-site renewables, CHP and efficiency on a level playing field with utility-supplied generation.
- Very common among water and sewer utilities, including in Hawaii.



Expected Result

of Impact Fees

- New buildings will be significantly more efficient.
- New buildings will be significantly more likely to choose alternative fuels and/or CHP
- Rate increases to existing customers will be greatly mitigated.
- Since the “best” time to install alternatives is at the time of construction, this result is likely to be economically efficient.

Which are Most Likely To Assist With Meeting RPS?

- Green rate with default portfolio that includes statutory target.
- Inverted residential rates will encourage solar water heat usage.
- Impact fees will encourage the greatest use of efficiency, direct-application renewables, and CHP.